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NORTH AMERICAN PINNIPEDS

History of the North American Pinnipeds: a Monograph of the Walruses, Sea-Lions, Sea-Bears, and Seals of North America. By J. A. Allen, Assistant in the Museum of Comparative Zoology at Cambridge. (Washington: Government Press, 1880.)

THIS bulky octavo volume forms No. 12 of the miscellaneous publications of the Department of the Interior, United States Geological and Geographical Survey of the Territories, which is under the charge of F. V. Hayden. It is a most important contribution to the life-history of the species of American Pinnipeds, for which the zoologist as well as the merchant may well thank both Mr. Hayden and Mr. Allen.

It is not an easy task to analyse a closely-printed volume of nearly 800 pages, but still we trust to be able to give our readers some notion of the general contents of this interesting work. Of the mammals, leading an essentially aquatic existence, the furred and fin-footed group have always had an importance and interest for mankind. The existing Pinnipeds constitute three very distinct families—these are the Walruses, the Eared Seals, and the Earless Seals. The first two are far more nearly allied than are either of these with the third. The Earless Seal is the lowest or most generalised group. The Walruses are really little more than thick clumsy fat forms of the Eared Seal group, with immensely developed canine teeth, and skulls modified so as to bear these. All the Pinnipeds have a high degree of brain development, and are easily domesticated under favourable conditions; they manifest strong social and parental affections, and they defend their young with great courage. They are, almost without exception, carnivorous, mostly feeding on fish, mollusks, and crustacea. While the Eared Seals are polygamous, the males greatly exceeding the females in size, the Walruses and the Earless Seals are thought to be monogamous, and there is very little difference between the size of the sexes. The polygamous species usually resort in large numbers to favourite breeding-grounds, the young are born on dry ground, and are at first unable to swim; while the monogamous forms do not so uniformly resort to particular breeding-grounds on land, and they leave the water only for short intervals. As a group the Pinnipeds are very distinctly characteristic of the Arctic, Antarctic, and temperate portions of the globe; very few range into tropical waters, and only one species can be said to be strictly tropical. While the Seals, Eared and Earless, are abundantly represented on both sides of the Equator, the Walruses are only to be found within the colder portions of the Northern Hemisphere. Of the family of the Walruses but two living species belonging to the genus *Odobæus* are known, the one, *O. rosmarus*, being the Atlantic Walrus; the other, *O. obesus*, the Pacific Walrus. The history of both species is here given at length: first a full synonymy is given; then the general history, accompanied by figures; then habits, products, food, and enemies. Among the figures given are those of Elliott of the head of the Pacific species, which give an idea of the uncouth facial aspect and of the

strangely-wrinkled skin; but it is a pity that none of Elliott's representations of an adult form were reproduced from his work on Alaska, published in 1879, and of which only one hundred and twenty-five copies were printed. Capt. Cook's description of this species is still one of the best extant—a species that may soon disappear if the annual slaughter of ten to twelve thousand animals is allowed to continue.

The number of genera and species among the group of the Eared Seals has fluctuated immensely even within the last ten years. The views of Gray and Peters have repeatedly changed on this subject, "greatly," the author writes, "in the case of Gray, out of proportion to the new material he had examined." In Peters' latest enumeration he gives thirteen species: five are Hair Seals, or Sea-lions, eight are Fur Seals, or Sea-bears. Mr. Allen enumerates nine—two with doubt. Five are Hair and four Fur Seals. A good deal of this discrepancy doubtless arose from writers not having learnt to distinguish the sexes, and from their not making due allowance for the great changes in contour and details of structure that result in the skulls of these animals from age. The most striking fact in respect of the distribution of the Eared Seals is their entire absence from the waters of the North Atlantic. The Fur and Hair Seals have nearly the same geographical distribution; but though commonly found frequenting the same shores, they generally live apart. They are about equally and similarly represented on both sides of the equator, but are confined almost wholly to the temperate and colder latitudes. The Hair Seals have coarse hard stiff hair, and are wholly without soft under-fur, the abundant presence of which in the Fur Seals it is which makes their skins so valuable as articles of commerce.

The Eared Seals are all gregarious and polygamous. Their breeding-places have received the strangely inappropriate name of "rookeries." The strongest males generally secure to their lot from twelve to fifteen females. During the breeding season the males remain wholly on land, and they will suffer death rather than stir from their chosen spot. They thus sustain for a period of several weeks a continual fast. Steller's account, given nearly a century ago, applies still to nearly all the species. The "sea-fur" of the furriers is obtained from these Eared Seals with the under-fur. Fortunately the destruction of the Fur Seals at the Aleutian Islands, where at one time these seals were killed at the rate of 200,000 a year, has now been placed under rigid restrictions, and the same systematic protection ought to be afforded to them at all their stations. In 1877 Mr. Elliott calculated that the number—owing to the Government regulations—of Seals on the Alaska Islands had increased so as to leave 660,000 breeding females to be added to the original stock, and that the total number would not be much less than 1,800,000.

The description of the Earless Seals forms nearly one half of the volume. The technical history of the group is given at length and is most interesting. The genus *Phoca* of Linneus embraced four species now placed in four distinct genera and in three families. Since then 103 distinct specific and varietal names have been bestowed upon what our author considers as sixteen species. These are located in three sub-families and placed in

eleven genera. Copious synonymic details are given. Of the restricted genus *Phoca*, three—*P. vitulina*, *P. Groenlandica*, and *P. fatida*—are marine, and frequent the northern oceans, never descending anywhere near to the equator. A fourth, *P. Caspica*, is found in the Aral and Caspian Seas, and a fifth, *P. Sibirica*, is from Lakes Baikal and Oron. *Monachus albiventer* occupies an intermediate position (Mediterranean, Madras, and Canary Islands) between these northern forms and the Antarctic species, such as *Macrorhinus leoninus*, *Ogmorhinus leptonyx*, *Ommatophoca rossi*, and the like. All the species have strong social instincts, and are almost unsurpassed in their affection for their young. Most of them are gregarious; few of them are in the least ferocious; they are in general patient and submissive creatures, quite harmless to man. Fond of basking in sunshine, they spend a good deal of their time out of the water, on bank, rock, or ice. They are very voracious, eating fishes, or in lack of these, mollusks and crustacea. Strange though it may seem, the young seals take to the water reluctantly, and have to be actually taught to swim by their parents. The young of some species remain on the ice until they are from two to three weeks old, or until they have shed their first soft woolly coat of hair; their cry is more of a bark than a roar; that of the young is a kind of tender bleat, putting one in mind of the cry of a young child. Dr. Murie (*Proc. Zool. Soc. London*, 1870) has characterised three distinct modes of terrestrial locomotion among these Seals, from which it would appear that the Phocine Seals generally have considerable power of movement upon land.

The Seal-hunting districts are described at length; the oil and skins of these Seals having a large commercial importance. The Dundee sealers took in 1876 nearly 40,000*l.* worth. The habits of the various species form a most interesting portion of this division of the volume, and the author seems to have ransacked every treatise on the subject so as to make his own complete. This history of the North American Pinnipeds will long remain a perfect monograph of a valuable and important group of mammalia.

CATALOGUE OF NEWCASTLE LIBRARIES

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